O5~~7~~0
~~1907~~
#3

OIPE

RAW SEQUENCE LISTING   DATE: 10/24/2001
PATENT APPLICATION: US/09/680,959   TIME: 14:47:19

Input Set : A:\LEX-0051-USA SEQLIST.TXT
Output Set: N:\CRF3\10242001\I680959.raw

```
      4 <110> APPLICANT: Friedrich, Glenn
      5       Zambrowicz, Brian
      6       Sands, Arthur T.
      8 <120> TITLE OF INVENTION: Novel Mutated Mammalian Cells and
      9       Animals
     11 <130> FILE REFERENCE: LEX-0051-USA
C--> 13 <140> CURRENT APPLICATION NUMBER: US/09/680,959        ENTERED
C--> 13 <141> CURRENT FILING DATE: 2000-10-04
     13 <150> PRIOR APPLICATION NUMBER: US 60/157,651
     14 <151> PRIOR FILING DATE: 1999-10-04
     16 <160> NUMBER OF SEQ ID NOS: 574
     18 <170> SOFTWARE: FastSEQ for Windows Version 4.0
     20 <210> SEQ ID NO: 1
     21 <211> LENGTH: 442
     22 <212> TYPE: DNA
     23 <213> ORGANISM: Mus musculus
     25 <220> FEATURE:
     26 <221> NAME/KEY: misc_feature
     27 <222> LOCATION: (1)...(442)
     28 <223> OTHER INFORMATION: n = A,T,C or G
     30 <400> SEQUENCE: 1
     31 aggcagccat cttctcctcc ctcgatcatc ttttccatcc agatgcaagt cgtgggagct      60
W--> 32 ganagctcgg acnagggtga gattgccgcc ttccctccga cccgaacgcg tgcgccccgc     120
W--> 33 cggcccccg ctgggtgcac actcgcacgc acaccctcgc acccataccc gcacacncgg     180
W--> 34 gagcacacgc acaggtantc agtcacacac caagggcagc agcgacggcg gacnaaacat     240
W--> 35 gctccggtgg cattgcaacc ccccacccc cgccatccaa ccttgcaatt cntttgcagt     300
W--> 36 cagaccccaa accccacacc ttccccggag ccccctcca taaaaaantg ccttcccccc     360
W--> 37 aaaacacacn cgcacacntn acncaaannt ngganaatgg accgacagaa aatntttttg     420
     38 gcaaatgctc catcaaaagg gc                                              442
     40 <210> SEQ ID NO: 2
     41 <211> LENGTH: 238
     42 <212> TYPE: DNA
     43 <213> ORGANISM: Mus musculus
     45 <400> SEQUENCE: 2
     46 gcttttagcc aaaaaatcaa tgaaccagta agttgcattc gaaacggagg catatgccag      60
     47 tatcggtgca ttggccttag gcataagatt ggaacttgtg gatctccttt caaatgctgc     120
     48 aagtgataat agagaagaca aagatcctgc aaaccaaaga aaacaccaga attttttcct     180
     49 ccatgaagat ggacaaaact taaaccaaat taaagtttct tgattaaatg caaacact        238
     51 <210> SEQ ID NO: 3
     52 <211> LENGTH: 310
     53 <212> TYPE: DNA
     54 <213> ORGANISM: Mus musculus
     56 <220> FEATURE:
     57 <221> NAME/KEY: misc_feature
     58 <222> LOCATION: (1)...(310)
     59 <223> OTHER INFORMATION: n = A,T,C or G
     61 <400> SEQUENCE: 3
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/680,959

DATE: 10/24/2001
TIME: 14:47:19

Input Set : A:\LEX-0051-USA SEQLIST.TXT
Output Set: N:\CRF3\10242001\I680959.raw

```
W--> 62 atgggtctca cggccaagga nctgggaggc ctccgatgac tcttcagcaa ggtgtacaaa    60
W--> 63 gccaagtacc cattgttggc tacacagccc gaangatcct caacgaggat ggcagcccca   120
     64 acctggactt caagcctgaa gaccagcccc attttgacat aaaggacgaa ttctgatgtc   180
     65 tagctgagaa gcagccggtt ctagggagaa gtgaggggac aggagttaag tgtccctcgg   240
     66 aacaagcgga ggaagcctcc gagtgccctg cagctgaata aagcgaatgt ttaactggga   300
     67 aaaaaaaaaa                                                          310
     69 <210> SEQ ID NO: 4
     70 <211> LENGTH: 468
     71 <212> TYPE: DNA
     72 <213> ORGANISM: Mus musculus
     74 <400> SEQUENCE: 4
     75 ggaattcgat atcaagctta ccatgaacga gtacaagccc acggtgcgcc tcgccacccg    60
     76 cgacgacgtc cccaggggcc gtacgcaccc tcgccgccgc gttcgccgac taccccgcca   120
     77 cgcgccacac cgtcgatccg gaccgccaca tcgagcgggt caccgagctg ctgatgcaga   180
     78 gaattgagca gctttaaatt tagatttcaa tatttgagag aaatcagtaa atgttcatac   240
     79 tcgttaacta tgtcaaactt tttattttat aaaatatagt ctgctaatat gtatattggc   300
     80 ataagaattc ccaacagcat tttatgactc cttgggttta aaacctcagt attaaattta   360
     81 tcagtgtttg tggtgcagca catttaagtt caacatagtc cacacatttt gttggaagaa   420
     82 gttttcaaat aaaaagcgcg agttggattt ttcccattaa aaaaaaaa                468
     84 <210> SEQ ID NO: 5
     85 <211> LENGTH: 283
     86 <212> TYPE: DNA
     87 <213> ORGANISM: Mus musculus
     89 <400> SEQUENCE: 5
     90 agaccagaca gtctggagta ttatcttgaa gtaatacatt gcccgaacaa tgtgcaagaa    60
     91 gattgcagga gataatgaaa actgcttgtt tcaacaggat cctaaaatga aaagatggt    120
     92 gttttgcatt tttattgtta gctccaaacc atggaagttt gaacttaaaa tgctgaagaa   180
     93 gcaatgcaaa gatatctaat cagcattcgg gacaccttgc cactcttact tttctttaa    240
     94 ctgaataaag atgcttgtaa gatagtggac caccacaaaa aaa                    283
     96 <210> SEQ ID NO: 6
     97 <211> LENGTH: 252
     98 <212> TYPE: DNA
     99 <213> ORGANISM: Mus musculus
    101 <220> FEATURE:
    102 <221> NAME/KEY: misc_feature
    103 <222> LOCATION: (1)...(252)
    104 <223> OTHER INFORMATION: n = A,T,C or G
    106 <400> SEQUENCE: 6
W--> 107 cttcactttc agctgctgcc ggctgccacc cttgcaccag ctnaaccanc agngcctgct    60
W--> 108 ggagtaagta ctantctgan ntntgccgca tgcntntgnc tacccacatg gccatcnngg   120
W--> 109 tctcnatgct gctntccagg acanacgcnn anaggnagng agctttggaa tccaccccctt   180
W--> 110 ctgtgggggа aaactacntt caccaggant accatggctt tnccagtncc agtanaatgg   240
    111 tggacattgg cg                                                       252
    113 <210> SEQ ID NO: 7
    114 <211> LENGTH: 318
    115 <212> TYPE: DNA
    116 <213> ORGANISM: Mus musculus
    118 <400> SEQUENCE: 7
    119 gctggcgtcc aggtcatcaa tgcttgtgaa gagttctatt gcctagaaca tggaatctag    60
```

```
120  cctgagggcc agatcaaaga agaatatcat caaggaagga tatgactctt cttcaatgag    120
121  ataggtacta acagtccagt acaatagcaa acaccaacca tgaatcagta gcagtggcaa    180
122  gatccagcag aaacagcaag actccatcga atcggcacaa gtcaacggaa gacgccagaa    240
123  tcagctggaa tatcataagt tctctggcac atttctctct gtgaagtgaa gaccaataaa    300
124  aagatcagtg aagaccgg                                                   318
126  <210> SEQ ID NO: 8
127  <211> LENGTH: 411
128  <212> TYPE: DNA
129  <213> ORGANISM: Mus musculus
131  <220> FEATURE:
132  <221> NAME/KEY: misc_feature
133  <222> LOCATION: (1)...(411)
134  <223> OTHER INFORMATION: n = A,T,C or G
136  <400> SEQUENCE: 8
137  agctgattta ccagagccc agcatgggtt tcctgactgc cgtgactcaa ggcctggtgc      60
138  ggggagctga caggatgagc aagtggacaa gcaagcgggg accacgcacc ttcactaaga    120
139  gtcggggtgc caagaaaaca ggcatctata cttctgatag gaagtttgtg caaataaaag    180
140  aaatggttcc agaatttgtc gtcccggact tgacgggctt caagctcaag ccctacgtta    240
141  attaccgagc tcctgcaggc atagacacac ctctgaccgc caaagcgctc ttccaggaaa    300
142  cagttgcacc cgctatcgaa aaagacttta aagaagggac atttgatgct aacaacctgg    360
W-->143  agaaatccgg tttnaancca cacaggaagg caagctggtc caatatatcc t           411
145  <210> SEQ ID NO: 9
146  <211> LENGTH: 579
147  <212> TYPE: DNA
148  <213> ORGANISM: Mus musculus
150  <220> FEATURE:
151  <221> NAME/KEY: misc_feature
152  <222> LOCATION: (1)...(579)
153  <223> OTHER INFORMATION: n = A,T,C or G
155  <400> SEQUENCE: 9
156  gactgcattt acccacatgg cagccctgtt cccaccaccg cctggtccca gatttgtcct      60
157  ccgaggcaca cagtcggctg tgaacacgct ccatttctgc ccaccatccc aagctgcagg    120
158  gaacccactt ctcttctcag ggtctcagaa tggcctagta catatctgga gcctacaaac    180
159  aagaagaata gttaccactc taaatggcca tgggggccag ggtgtaatct ggctgaagac    240
W-->160  actgccacag ggacaccagc tcctcaggca gggtcganac ctgcggctgt gcctgnngga    300
W-->161  cctggaggan ggcaggaaca ccatcatgga ctcanntnag ntggacagtg tgggcttatg    360
W-->162  caggggctcc atcctggtca ggggacagca gtgctggatg cttgctgtgc canggaaggg    420
W-->163  cagcgacgaa gtgccacctg cgttaganat gaanggccaa gaagctgagt gacctncaaa    480
W-->164  gaggaagact acttgntnca tggcttnagg ntggntcatc cnctgaancc tcagagnggc    540
W-->165  atcttngtgt gtctgtggct tgggctgaac taataacca                           579
167  <210> SEQ ID NO: 10
168  <211> LENGTH: 236
169  <212> TYPE: DNA
170  <213> ORGANISM: Mus musculus
172  <400> SEQUENCE: 10
173  cctgagagca ggttgttgcc ctggatgccc agaatatcgt aagctgttgc gtgtggagaa      60
174  gctcacacgt tagcgctgaa tgacaagggc caggtgtatg cttggggtct cgactctgac    120
175  ggacagcttg gcctacaggg atcagaggaa tgtatcagag tacccaggta acaaaggtga    180
176  ccgcacagag gtccttaagc ttctataata aatttatcta tctaaatcaa aaaaaa         236
```

RAW SEQUENCE LISTING   DATE: 10/24/2001
PATENT APPLICATION: US/09/680,959   TIME: 14:47:19

Input Set : A:\LEX-0051-USA SEQLIST.TXT
Output Set: N:\CRF3\10242001\I680959.raw

```
     178 <210> SEQ ID NO: 11
     179 <211> LENGTH: 375
     180 <212> TYPE: DNA
     181 <213> ORGANISM: Mus musculus
     183 <220> FEATURE:
     184 <221> NAME/KEY: misc_feature
     185 <222> LOCATION: (1)...(375)  OK
     186 <223> OTHER INFORMATION: n = A,T,C or G
     188 <400> SEQUENCE: 11
     189 aactgagatg cctgccttcg atgtcaagct gaaaacaaag caagaggact gtgttgtggt      60
     190 ctggggagag tgtaaccatt ccttccacaa ctgctgcatg tccctgtggg tgaaacagaa     120
     191 caatcgctgc cctctgtgcc agcaggactg ggtagtccaa agaatcggca aatgagaggt     180
     192 ggcccaggcg ctcctggtgt ggttgctgac cctggacaaa gactaaacac tgcaggggat     240
     193 tcatccttga gagagagagg atgctgtgcg cctttgagac tcaccaaagg cttgctttat     300
W--> 194 taatttgtct gtttagtttt gggaaattct ctacaattaa aataatttgn taaaaatggc     360
     195 ctttcctacc ttggg                                                      375

     197 <210> SEQ ID NO: 12
     198 <211> LENGTH: 404
     199 <212> TYPE: DNA
     200 <213> ORGANISM: Mus musculus
     202 <220> FEATURE:
     203 <221> NAME/KEY: misc_feature
     204 <222> LOCATION: (1)...(404)  OK
     205 <223> OTHER INFORMATION: n = A,T,C or G
     207 <400> SEQUENCE: 12
W--> 208 actgagaaag gcccgtgaga gctgaactct gannactgaa gttctaagaa gccggaccga      60
W--> 209 tgtgcacaga gaaggaatga aggaagtatg gatgtgaagg aacgcangcc ttactgctcc     120
     210 ttgaccaaga gcagacggga aaaggaaagg cgctatacaa actcgtccgc ggacaatgag     180
W--> 211 gagtgtaggg tccccacgca gaagtcctat agttccagng aaaccttgaa agctttcgat     240
W--> 212 catgattctt cacggntgct ttatggaaac agagtaaagg atttggtcca cagagaagcc     300
W--> 213 gacgagtata ctanacaagg acngaatttt accctaaggc agttaggagt gtgtgaatcc     360
W--> 214 gcaactcnaa gaggagtggc nttctgtgcg gaaatggggc ttcc                      404

     216 <210> SEQ ID NO: 13
     217 <211> LENGTH: 314
     218 <212> TYPE: DNA
     219 <213> ORGANISM: Mus musculus
     221 <220> FEATURE:
     222 <221> NAME/KEY: misc_feature
     223 <222> LOCATION: (1)...(314)  OK
     224 <223> OTHER INFORMATION: n = A,T,C or G
     226 <400> SEQUENCE: 13
     227 ctgaacgagt gacttcacta ggcaaggact ggcatcgtcc ctgcctgaag tgtgagaaat      60
     228 gtggaaagac actgacctct gggggtcatg ctgagcatga aggcaagccc tactgcaatc     120
W--> 229 atccctgcta ctccgccatg tttgggccca aaggctttgg gcgaggtgga gctganagcc     180
     230 acactttcaa gtagaccgag gttgtggaaa ctctccctgc ccgcccaggc acatgccagg     240
     231 ccttacccct ggacagcagg gctctcggga accctcagtg cctttaataa acctgatctt     300
     232 tggaaaaaaa aaaa                                                       314

     234 <210> SEQ ID NO: 14
     235 <211> LENGTH: 336
```

RAW SEQUENCE LISTING   DATE: 10/24/2001
PATENT APPLICATION: US/09/680,959   TIME: 14:47:19

Input Set : A:\LEX-0051-USA SEQLIST.TXT
Output Set: N:\CRF3\10242001\I680959.raw

```
       236 <212> TYPE: DNA
       237 <213> ORGANISM: Mus musculus
       239 <220> FEATURE:
       240 <221> NAME/KEY: misc_feature
       241 <222> LOCATION: (1)...(336)
       242 <223> OTHER INFORMATION: n = A,T,C or G
       244 <400> SEQUENCE: 14
W--> 245 gactgaggag ggcccgtgta gccattacga ggggtgggcc aaccttctgn tttgtatggt      60
       246 atgccaaggg agaccgtatg cttcggaatg ctcaaggcta aggcccaggc cctggtgcag     120
       247 tacctggagg aacccctcac ccaagtagca gcatcataac agcgtgagat gccaggactt     180
W--> 248 ggaaggtgcc attncnaggg tggncaacct tntgntatnt ntgtatgcca nggagaccgt     240
W--> 249 aagcttctaa tgctctnggc taacgcccat gccctggtgc antacctgga ggaacccctc     300
W--> 250 acccaagtag cancatcata acagcgtgag atgcca                                336
       252 <210> SEQ ID NO: 15
       253 <211> LENGTH: 280
       254 <212> TYPE: DNA
       255 <213> ORGANISM: Mus musculus
       257 <220> FEATURE:
       258 <221> NAME/KEY: misc_feature
       259 <222> LOCATION: (1)...(280)
       260 <223> OTHER INFORMATION: n = A,T,C or G
       262 <400> SEQUENCE: 15
W--> 263 cacccctgg ccttgacaac cctgtcctgg ntctnacctn gcaatgntnn ngccctaaga       60
W--> 264 cgccttcacc tatggnccct ctttggnncc ggacgggacn tggactaacc tggcccnggt     120
W--> 265 gttcttncct ttttgaagan cttaaancct agganccctt ngtctgtcac accaggcctg     180
W--> 266 gggctggggg acagaaccgg agcacacacc ccctacanct gtcangnggg ggatggaacc     240
       267 tggggacctt tccttttcca taccatgggg ccaggatatg                            280
       269 <210> SEQ ID NO: 16
       270 <211> LENGTH: 329
       271 <212> TYPE: DNA
       272 <213> ORGANISM: Mus musculus
       274 <220> FEATURE:
       275 <221> NAME/KEY: misc_feature
       276 <222> LOCATION: (1)...(329)
       277 <223> OTHER INFORMATION: n = A,T,C or G
       279 <400> SEQUENCE: 16
W--> 280 actgagatgt ttcaaacctt ggttcaaaaa gtctgggtcc ccatgaaacc ctnctatacc       60
W--> 281 caggtttacc aggaannntg ggnaggagtg gggttaatga gcctcatcgt atataaaatc     120
W--> 282 angagngctg ataaaagaag tnaagctttg aaaggtcctg caccttgccc atggccatca     180
       283 ctaactgctc cgaatccaca agatgaagac gtcggctaaa cttgagcaag ctttgttaga     240
       284 tgggaacatg gaacatcact gtacacttat ctaagtacca tttataatgg tggcattaat     300
       285 aaatgtatct gtgaatacca aaaaaaaaa                                        329
       287 <210> SEQ ID NO: 17
       288 <211> LENGTH: 374
       289 <212> TYPE: DNA
       290 <213> ORGANISM: Mus musculus
       292 <220> FEATURE:
       293 <221> NAME/KEY: misc_feature
       294 <222> LOCATION: (1)...(374)
```

Use of n and / or Xaa has been detected in the
Sequence Listing. Review the Sequence Listing
to ensure a corresponding explanation is present
in the <220> to <223> fields of each sequence
using n or Xaa.

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/680,959

DATE: 10/24/2001
TIME: 14:47:21

Input Set : A:\LEX-0051-USA SEQLIST.TXT
Output Set: N:\CRF3\10242001\I680959.raw

```
L:13 M:270 C: Current Application Number differs, Replaced Current Application No
L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:32 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:33 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:34 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:35 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:36 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:37 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:62 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:63 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:107 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:108 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:109 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:110 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:143 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8
L:160 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:161 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:162 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:163 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:164 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:165 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:194 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:208 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:209 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:211 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:212 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:213 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:214 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:229 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:245 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:248 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:249 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:250 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:263 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15
L:264 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15
L:265 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15
L:266 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15
L:280 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16
L:281 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16
L:282 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16
L:302 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17
L:303 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17
L:321 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18
L:322 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18
L:323 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18
L:336 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:337 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:355 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20
```

VERIFICATION SUMMARY   DATE: 10/24/2001
PATENT APPLICATION: US/09/680,959   TIME: 14:47:21

Input Set : **A:\LEX-0051-USA SEQLIST.TXT**
Output Set: **N:\CRF3\10242001\I680959.raw**

```
L:373 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21
L:445 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26
L:461 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:476 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28
```